



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,568	09/30/2003	Timothy J. Daniel	BUCKFELLER 17-4-2-4	9978
47396	7590	12/15/2008		
HITT GAINES, PC LSI Corporation PO BOX 832570 RICHARDSON, TX 75083			EXAMINER MOORE, KARLA A	
			ART UNIT	PAPER NUMBER
			1792	
			NOTIFICATION DATE	DELIVERY MODE
			12/15/2008 ELECTRONIC	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket@hittgaines.com

### Office Action Summary

**Application No.**

10/675,568

**Applicant(s)**

DANIEL ET AL.

**Examiner**

KARLA MOORE

**Art Unit**

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 March 2008.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 8, 9 and 14 is/are pending in the application.  
4a) Of the above claim(s) 14 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-5, 8 and 9 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 26 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/SF/08)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-5 and 8-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 1 recites the limitation "the surface of the second portion" at line 10, thereof. There is insufficient antecedent basis for this limitation in the claim.
4. Claims 2 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: how the top planar surface is contactable with a planar backside of a wafer when pads are present and/or the wafer may be disposed on the plurality of pads and contacting the top planar surface of the first portion.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-2, 4-5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,841,624 to Xu et al. in view of U.S. Patent No. 6,106,630 to Frankel, U.S. Patent No. 6,146,504 to Patadia et al. and U.S. Patent Publication No. 2001/0029895 A1 to Hanamachi et al.

8. Xu et al. disclose a physical vapor deposition chamber (not illustrated, but mentioned at column 1, rows 13-17 and column 8, rows 28-30) for depositing material

on a wafer (120) substantially as claimed and comprising: a chuck (Figure 1, 110), wherein the chuck comprises a planar upper surface (112) and sidewalls extending downwardly therefrom; a removable pedestal cover (100) overlying the planar upper surface of the chuck and extending below the planar upper surface along a portion of the sidewall, the removable pedestal cover having a first planar surface (contacting the substrate) and a second planar surface (contacting the chuck) located below the first surface (i.e. first portion); and wherein a planar backside of the wafer is in contact with the planar upper surface of the pedestal cover. Admittedly, the pedestal cover of Xu et al. does not comprise a singular, continuous, planar upper surface in the region overlying the chuck, but a plurality of intermittent planar upper surfaces in the region overlying the chuck. The cover is chemically removable (column 5, rows 41-46).

9. Xu et al. disclose the chamber substantially as claimed and as described above.

10. However, Xu et al. fail to teach the pedestal cover extending laterally beyond the sidewalls (i.e. a second portion).

11. Frankel discloses a pedestal cover for both top and side surfaces (i.e. all exposed surfaces) of a chuck and the chuck disposed in a cavity thereof for the purpose of protecting all of the areas most susceptible to processing gases (column 10, row 24, through column 11, row 15). In Frankel, the lower surface of the pedestal cover is concave and completely receives the chuck therein during a processing method, such as material deposition.

12. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the pedestal cover in Xu et al.

extending beyond chuck side walls (i.e. covering all exposed surfaces) and the chuck disposed in a cavity thereof in order to protect all areas of the chuck most susceptible to processing gas as taught by Frankel.

13. Xu et al. and Frankel disclose the invention substantially as claimed and as described above.

14. However, Xu et al. and Frankel fail to teach the pedestal cover defining a peripheral circumferential groove therein in an upper surface of the second surface, wherein a circumference of the wafer extends radially inwardly of the groove.

15. Patadia et al. disclose providing a peripheral (with respect to the substrate) circumferential deposit collection channel on a substrate supporting device for the purpose of trapping deposit particles that do not deposit on the substrate thus preventing deposition and sticking on the backside of a processed substrate (abstract). In Patadia, a circumference of the wafer extends radially inwardly of an inner sidewall (124) of the groove. This is necessary; otherwise, the purpose of the groove (collecting material) would not be achieved.

16. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a peripheral circumferential groove on the substrate supporting device wherein a circumference of the wafer extends radially inwardly of an inner sidewall of the groove in Xu et al. and Frankel in order to trap deposit particles that do not deposit on the substrate thus preventing deposition and sticking on the backside of a processed substrate as taught by Patadia et al.

17. Xu et al., Frankel et al. and Patadia et al. disclose the invention substantially as claimed and as described above.

18. However, Xu et al., Frankel et al. and Patadia et al. fail to teach that the removable cover is a removable, detachable pedestal slip cover (i.e. provided for slippable detachment).

19. Hanamachi et al. teach providing a removable, detachable pedestal slip cover (i.e. provided for slippable detachment) for the purpose of obtaining the ability to simply replace the cover if it becomes corroded, which substantially reduces the cost for maintenance work (abstract).

20. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a removable, detachable pedestal slip cover (i.e. provided for slippable detachment) in Xu et al., Frankel et al. and Patadia et al. in order to obtain the ability to simply replace the cover if it becomes corroded, which substantially reduces the cost for maintenance work as taught by Hanamachi et al.

21. With respect to claims 2 and 5, Xu et al. further teaches that the pedestal cover further comprises a plurality of pads (102) on an upper surface thereof, such that the wafer may be disposed on the plurality of pads.

22. With respect to claim 4, the Patadia et al. teach that the design and dimensions of the groove are optimized for collection of material and minimization of backside deposition. Specific dimensions would be chosen based on these objectives. The courts have ruled that where the general conditions of a claim are disclosed in the prior

art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).d n

23. With respect to claim 9, Examiner notes that the limitations are drawn to a method of using the apparatus and the courts have ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Examiner notes that Xu et al. also teach these method limitations at column 4, rows 17-19.

24. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Xu et al., Frankel, Patadia et al. and Hanamachi et al. as applied to claims 1-2, 4-5 and 9 above, and further in view Applicant's admitted prior art.

25. Xu et al., Frankel, Patadia et al. and Hanamachi et al. disclose the invention substantially as claimed and as described above.

26. However, Xu et al., Frankel, Patadia et al. and Hanamachi et al. fail to teach an aluminum deposition target.

27. Applicant's admitted prior art teaches that aluminum targets are conventionally used in integrated circuit device manufacture (paragraphs 4-6 of specification).

28. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an aluminum deposition target in Xu et



al., Frankel, Patadia et al. and Hanamachi et al. in order to perform integrated circuit device manufacture as is conventionally done as taught in the admitted prior art.

29. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Xu et al., Frankel, Patadia et al. and Hanamachi et al. as applied to claims 1-2, 4-5 and 9 above, and further in view of U.S. Patent No. 5,656,093 to Burkhart et al.

30. Xu et al., Frankel, Patadia et al. and Hanamachi et al. disclose the invention substantially as claimed and as described above.

31. However, while Xu et al. do teach that the pads of the pedestal cover may comprise a conducting material, stainless steel is not explicitly taught as the conducting material.

32. Burkhart et al. teach the use of stainless steel as a material for conducting pads of a pedestal cover for the purpose of using a material having superior contact properties (column 2, rows 15-20).

33. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the pedestal cover/pads comprising stainless steel in Xu et al., Frankel, Patadia et al. and Hanamachi et al. in order to use a material with superior contact properties as taught by Burkhart et al.

### ***Response to Arguments***

34. Applicant's arguments with respect to claims 1-5 and 8-9 have been considered but are moot in view of the new ground(s) of rejection. The above rejections have been

modified using the same prior art previously relied upon to take into account the most recent amendments to the claims.

### ***Conclusion***

35. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **KARLA MOORE** whose telephone number is (571)272-1440. The examiner can normally be reached on Monday-Friday, 9:00 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone

Art Unit: 1792

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Karla Moore/

Primary Examiner, Art Unit 1792